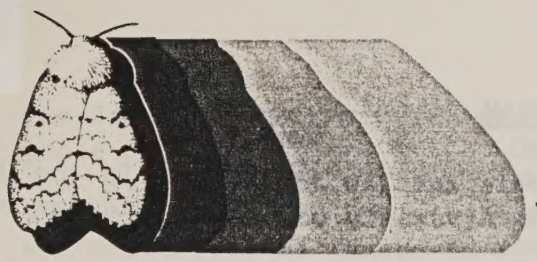

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OCTOBER 1979

NUMBER ONE

GYPSY MOTH NEWS

370 REED ROAD, BROOMALL, PA 19008
U.S.D.A., FOREST SERVICE

-- WELCOME BACK READERS --

After a longer than expected absence and numerous inquiries, the "Gypsy Moth-er Newsletter" finally is returning to the lineup on a more regular basis. In recognition of the many changes and events in the last few years we have given the newsletter a facelift and a new name.

"Gypsy Moth News" will continue to pursue the objectives of "Gypsy Moth-er", that is, to provide a communications link for those concerned with research, control, and management of the gypsy moth.

Much has happened in the two years since the last newsletter. The Gypsy Moth Program is phasing down, personnel have been reassigned, and application of program research is taking the lead. "Gypsy Moth News" will reflect the new post-program activities. Consequently, in this issue, we are emphasizing the 1979 season with only slight mention of what happened in 1978.

Compiled by the Forest Insect and Disease Management Staff, Delaware, Ohio

VERMONT and NEW YORK JOIN SUPPRESSION PROGRAM

This year Vermont and New York joined Pennsylvania and New Jersey in the USDA Forest Service cooperative suppression program. A variety of pesticides were used this year, including trichlorfon (PA, NJ,NY), carbaryl (NJ, NY, VT), diflubenzuron (NY), *Bacillus thuringiensis* (NY, VT), and nucleopolyhedrosis virus (NY).

While no major problems were encountered, Mother Nature did prove to be very trying, as several weather fronts moved through the northeast during the projects. The resulting rain and fog forced most spray projects to be delayed and undoubtedly caused much anxiety, though all projects were completed satisfactorily. Here is a brief recap of this year's accomplishments.

State	1978 (acres)	1979 (acres)
Pennsylvania	135,166	10,941
New Jersey	31,808	21,240
New York	-	7,500
Vermont	-	3,078

NEW FACES on SPRAY PROJECTS

The USDA Forest Service introduced the Forest Service Liaison Representative (FSLR) concept to state cooperators the past summer. Forest Insect and Disease Management (FIDM) personnel were present during suppression projects to provide technical assistance, to help monitor spray operations and to facilitate communications between Forest Service and state cooperator. In August FIDM met with State personnel to review the FSLR concept, and to explore the possibility of a more active Forest Service role.

GYPSY MOTH SPRAYED in LAKE STATES

This year an integrated gypsy moth management program was conducted by the Michigan Department of Agriculture, Plant Industry Division, in cooperation with USDA, APHIS, Plant Protection and Quarantine (PPQ). In late May, diflubenzuron was applied aerially to 35,670 acres in Montcalm County. In addition, the gypsy moth viral insecticide, Gypchek, was applied to 516 acres in Gratiot and Isabella counties. Following the spray activities, 48,000 Delta pheromone traps were deployed in central and southern Michigan. More than 1,000 square miles were trapped at the rate of 32 traps per square mile, and a nine square mile plot was trapped at the rate of 84 traps per square mile. This latter plot may be used in 1980 for operational use of the sterile-male technique.

The State of Wisconsin, in cooperation with USDA-APHIS, PPQ, conducted a two-phase control project in the Oconomowoc-Okauchee Lakes area near Milwaukee this summer. The following State agencies participated: Department of Agriculture, Trade and Consumer Protection, Department of Natural Resources, and University of Wisconsin Extension.

The nucleopolyhedrosis insecticide, Gypchek, was applied aerially to 300 acres in mid-May with second application a week later. In July, 420 acres were sprayed with the gypsy moth pheromone, Disparlure. In addition, a concentrated male moth trapping effort was undertaken in the city of Appleton. Approximately 1,900 traps were set up in a grid pattern to eliminate a small, but stubborn gypsy moth population.

OTHER RELATED ACTIVITIES

A regulatory project in Virginia and West Virginia was completed using diflubenzuron in two applications. Three blocks totalling 4,300 acres were involved, two of which straddled the State line below Harper's Ferry. The third lay on the same mountain ridge just to the south in Virginia. This was a cooperative effort between the two states and Animal and Plant Health Inspection Service (APHIS).

Finally, in an effort to prevent the artificial spread of gypsy moth to non-regulated areas of the U.S., APHIS sprayed 421 campgrounds in the northeast this year. A total of 32,290 acres were sprayed using carbaryl with excellent results. The program involved aerial and ground applications.

DEFOLIATION DOWN OVER 1978

Area-wide detectable defoliation was 636,678 acres this summer, down 50% from 1978. This is the second consecutive year that defoliation in the generally infested areas has declined. Pennsylvania experienced the greatest decrease, from 452,892 acres in 1978 to 8,552 acres this year for a 98% reduction!

Gypsy moth defoliation in New Jersey remained static, showing only a slight decrease this year. State personnel reported defoliation declines in Warren, Sussex, and Cape May counties, but significant increases in the northeastern counties, most notably in the Ramapo and Preakness Mountains and along the Palisades.

New York experienced defoliation reductions of about 70% under last year. But State personnel reported that egg mass numbers in several counties were substantially greater than last year.

While New York, New Jersey, and Pennsylvania experienced defoliation reductions in 1979, the New England States showed the opposite effect.

On the whole, defoliation increased 142% from 114,722 total acres in 1978 to 277,851 acres this year. Most of the growth can be attributed to increasing population trends in Massachusetts and Maine. The New England area will require closer attention in the near future.

Below are tabulated defoliation figures for 1978 and 1979. Defoliation was not detected in the isolated infestations in Wisconsin and Michigan this year.

Total Defoliation (Acres)

State	1978	1979
Maine	4,120	24,150
New Hampshire	725	3,980
Vermont	43,000	15,411
Massachusetts	63,042	226,310
Rhode Island	0	2,500
Connecticut	3,835	3,500
New York	500,046	156,575
Pennsylvania	452,892	8,552
New Jersey	204,330	193,700
TOTAL	1,271,990	636,678

PARASITE PROGRAMS CONTINUE

New Jersey continues to maintain mass production of gypsy moth parasites under the cooperative agreement with the U. S. Department of Agriculture. During 1978 nine species were released in selected New Jersey woodlands. This year four parasite species were reared: *Brachymeria lasus, Coccygomimus disparis, Exorista japonica,* and *Rogas lymantriae.* The following eight states received shipments: Connecticut, Delaware, Massachusetts, New York, Pennsylvania, Rhode Island, Vermont, and Virginia. This year's parasitism rates were higher than in 1978. One of the more significant parasites is *Parasetigena silvestris.*

Pennsylvania's aggressive parasite program effected the release of more than 185,000 parasites by early August, including *Apanteles ruidus, Brachymeria lasus, Coccygomimus disparis,* and *Exorista japonica.* In addition, 72 adult *Dinorhynchus dybowskyi* (Hemiptera: Pentatomidae) were released in a selected site in Wayne County. This was done in cooperation with USDA, Beneficial Insects Research Laboratory. Most of the parasites recovered from 1979 larval collections were tachinid flies.

Pennsylvania Division of Forest Pest Management is engaged in the following parasite-related studies:

1) Diapause termination and storage of *P. silvestris*
2) Host-parasite microhabitat variability.
3) Size and sex of gypsy moth pupae with respect to the resulting sex of *Brachymeria intermedia* progeny in field-collected hosts.
4) Tachinid parasite activity in forests treated with chemical insecticides in 1978 and 1979.
5) Trap designs and baits for live-capture of adult *P. silvestris*.
6) Hyperparasitism of tachinid parasites by *B. compsilurae*.

NEW PHEROMONE TRAPS EVALUATED

A large scale pheromone trap test was undertaken in New Jersey this year by APHIS. The objective of the test was to calibrate the new 2-quart and Gerberg traps as predictors of egg mass densities, when used with Hercon wicks impregnated with either the (+) or (-) Disparlure isomer. In addition, pint, quart, and gallon size traps were evaluated to see how trap size effects moth catches. A new data recording form (PPQ Form 539, June 1979) was designed to aid trap surveys this summer. The new form allows field data to be punched directly on cards for computer processing without intermediate copying or handling.

The New Jersey Department of Agriculture in cooperation with USDA-SEA, NJ Department of Environmental Protection and Herculite Products, Inc. evaluated an application of Hercon pheromone flakes this summer. The pheromone was applied at a rate of 20g A.I. per acre on 150 acres of woodland. Gypsy moth populations averaged 50 egg masses per acre. Preliminary results at the end of July indicated a degree of mating disruption.

GYPSY MOTH VIRUS EVALUATED

Two pilot projects were undertaken by the Forest Service this summer to evaluate the effectiveness of the viral insecticide Gypchek. One project in cooperation with Massachusetts Bureau of Insect Control evaluated a reduced volume application of Gypchek. The material was applied by helicopter at a rate of 1 gallon finished spray material per acre. The project took place near the towns of Wayland and Sherborne, and involved 400 acres.

The second project was undertaken in cooperation with the Vermont Department of Parks and Forestry. A total of 300 acres were sprayed near Middlebury and Burlington, to evaluate a new formulation containing the sunscreen Pro Tec. The Pro Tec formulation eliminates the need for the harder-to-handle molasses sticker and Shade sunscreen now used. The new formulation was applied at the rate of 2 gallons per acre by fixed wing spray aircraft.

In both projects the Gypchek was applied twice (about a week apart). Both state organizations were responsible for spray block establishment, spray plane contracting, and data collection.

Cooperation was excellent. Post spray egg mass counts are now underway and the results of these projects will be available this winter. Should the treatments prove efficacious, this will help reduce the cost of using Gypchek for gypsy moth suppression.

In a related matter, the Northeastern Forest Experiment Station, in cooperation with Northeastern Area State & Private Forestry, FIDM, published "Guidelines for the Use of Gypchek to Control the Gypsy Moth". This paper is written for the land manager, and describes the situations under which Gypchek should be used and how it should be applied. See "Recent Publications of Interest" section in this newsletter for a full citation. Copies may be obtained from the authors or by writing to USDA, Forest Service, 370 Reed Road, Broomall, PA.

WILDLIFE HABITAT STUDIED

The Forest Insect & Disease Management Staff in Delaware, Ohio, with assistance from Northeastern Forest Experiment Station, is evaluating the impact of gypsy moth tree mortality on wildlife habitat and tree regeneration in the Pocono Mountains of eastern Pennsylvania this fall. Quantitative data on the species, plant form and structure of existing vegetation is being collected on permanent plots established in 1971 as part of the gypsy moth post-control evaluation.

The project will determine the extent to which vegetation and wildlife habitat have been altered by tree mortality eight years after the initial gypsy moth defoliation in the Pocono Mountains. Specifically, the assessment is being made in terms of changes in selected wildlife habitat components. Inferences will be made of the potential occurrence and diversity of selected non-game birds and mammals common to the upland oak forests of eastern Pennsylvania. By relating this assessment of current habitat data to tree mortality, an understanding about predictions of wildlife habitat changes attributable to gypsy moth infestations should be possible for the Appalachian oak forests. The data also will provide estimates on early succession and potential stocking of important tree species, as well as value lost in these timber stands over the last eight years.

RISK RATING TECHNIQUES EVALUATED

The evaluation of susceptibility and hazard rating indices for gypsy moth-caused mortality in forests stands is underway in central Pennsylvania. In 1978, NA, Forest Insect and Disease Management in cooperation with Northeastern

Forest Experiment Station, and Pennsylvania Bureau of Forestry and State Game Commission, established more than 600 plots in 201 forest stands that were free of gypsy moth. Variables considered important in susceptibility and hazard rating procedures have been measured in these plots. These variables were described in Houston and Valentine (1977), Wargo (1978), and Gansner, Herrick, and White (1978).

FIDM personnel will be monitoring these plots to measure defoliation and mortality. This year several stands received moderate to heavy defoliation, but a large scale defoliation has yet to occur within the plot systems. This reflects the general gypsy moth population decline throughout Pennsylvania this year.

USDA AGENCIES COOPERATE ON LEADING EDGE

In 1979, APHIS and Forest Service with technical support from the Science and Education Administration undertook as a USDA effort, a 5-year pilot project to evaluate tactics in a strategy to retard the natural spread of the gypsy moth in Pennsylvania. As a USDA effort, APHIS is responsible for development and implementation of the intervention phase of the pilot project and the Forest Service, the evaluation phase. The project is carried out with the cooperation and advice of the Pennsylvania Bureau of Forestry and Pennsylvania Fish Commission.

This past summer, the objective of the pilot projects was evaluated on 48,000 acres of oak type forest treated with the following: diflubensuron (28,000 acres); *Bacillus thuringiensis* (5,000 acres); gypsy moth nucleopolyhedrosis virus (5,000 acres); *Bacillus thuringiensis* and Disparlure (5,000 acres) and Disparlure alone (5,000 acres). The pilot project objective will be evaluated using egg mass surveys, larval development surveys, male moth trapping surveys, assessment of natural gypsy moth nucleopolyhedrosis virus (NPV), defoliation estimates, and insecticide and Disparlure deposit assessments.

A pilot project interim report addressing the activities undertaken in 1979 will be made available in January, 1980.

NEW YORK INTRODUCES IPM

Forest Service, Forest Insect & Disease Management is cooperating with the New York Department of Environmental Conservation in pilot testing in Integrated Pest Management approach to dealing with the gypsy moth. This approach requires an in-depth evaluation alternative for gypsy moth suppression and implementation of those alternatives that best meet the needs of landowners on a local basis. In 1979, the second year of the pilot project, approximately 10,000 acres were treated with either the gypsy moth nucleopolyhedrosis virus (Gypchek), carbaryl, *Bacillus thuringiensis*, diflubensuron, or trichlorfon in Franklin, Clinton, Sullivan, and Orange counties. The State University of New York,

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GYPSY MOTH ACTIVITIES at the HAMDEN LAB

Gypsy moth research is going through a phase-down period at the Hamden Lab as individual studies are being completed and many scientists are becoming involved in other problem areas such as beech bark disease, spruce budworm, and registration of *Neodiprion sertifer* (sawfly) virus. Research on gypsy moth will continue at an accelerated level through fiscal year 1980.

There have been some personnel changes since the last newsletter. Bob Talerico's project on insect impacts was terminated during 1978. Bob is now Research Coordinator for the Eastern phase of the Canada/US Spruce Budworm Program and is located in Broomall, PA. Project member Bob Wilson retired and Harry Valentine joined Dave Houston's project on dieback and declines of hardwoods. Tom Skratt moved up to the spruce budworm project at Orono, Maine, and technician Nancy Gallagher also joined Houston's project. More recently, Dave Hubbard, forestry technician with Bill Wallner's project accepted a position on the Six Rivers National Forest in Eureka, California.

Hamden scientists are cooperating with FIDM personnel on many pilot projects to apply technology from the R & D Program and were heavily involved in the publication of the gypsy moth handbook series.

HAMDEN RESEARCH UNIT RECEIVES AWARD

The "Insect Pathology and Microbial Control" Research Unit, headed by Dr. Frank Lewis, was honored this summer by USDA for outstanding achievements in scientific research. The award was presented in Washington at the 33rd annual Honors Award Program by Secretary of Agriculture, Bob Bergland.

Lewis' group was cited for work leading to the development and registration of the gypsy moth nucleopolyhedrosis virus product, Gypchek. The NPV was developed at the Hamden Lab and is the first virus approved for use near human habitation.

Congratulations to Frank and the members of his staff!!

Secretary of Agriculture, Bob Bergland (left) presents the Superior Service Award to Project Leader Dr. Frank Lewis for his group's work leading to the registration of the gypsy moth virus product, Gypchek.

POST-PROGRAM EVALUATION REPORT

For the past 18 months, an interdisciplinary team from the University of Pittsburgh headed up by David Cleland, Professor of Systems Management and Engineering, has been conducting an in-depth evaluation of the Combined Forest Pest Program involving the Tussock and Gypsy Moth Expanded R & D Programs. During this period they have utilized questionnaires, personal interviews, a panel of experts, and program documentation to evaluate the effectiveness of the accelerated program concept. A draft report has already been prepared and reviewed by program and department personnel. Copies of the final report will probably be provided to those individuals who participated in the evaluation. Others interested in reviewing the evaluation report should contact David Ketcham, Environmental Coordinator, USDA Forest Service, PO Box 2417, Washington, D. C. 20013.

NATIONAL GYPSY MOTH MANAGEMENT BOARD

The National Gypsy Moth Management Board (NGMMB) has evolved from the former Gypsy Moth Advisory Council and is a product of the Gypsy Moth Planning Task Force. The task force and facilitators from the University of Wisconsin met for more than a year to design a comprehensive gypsy moth pest management system.

The chairman of the NGMMB is Dr. Robert M. Altman, Maryland Department of Agriculture, and vice-chairman is Dr. Alfred S. Elder, North Carolina Department of Agriculture. The first meeting of the board was held November 3, 1978, in Charlottesville, VA., during the Annual Gypsy Moth Review.

A second meeting was held in Arlington, VA., April 6, 1979, at which time agency representatives reported on plans for the year's activities. The Department's leading edge program was discussed at length and progress reported by representatives of the two permanent committee of the NGMMB, Planning and Design and Research and Development.

USDA GYPSY MOTH STEERING COMMITTEE

A USDA Gypsy Moth Steering Committee held its organizational meeting on December 18, 1978. This committee was established at the request of Assistant Secretaries of Agriculture Cutler and Smith to provide a precise mechanism for coordinating all USDA Gypsy Moth Program activities--action phase, methods application, and research. At this meeting, James L. Stewart, Director of Forest Insect and Disease Management, was elected chairman and Greg G. Rohwer, Director, National Program Planning Staff, APHIS, was elected co-chairman.

Members of the executive committee of the National Gypsy Moth Management Board were also in attendance and discussed the relationship between the Board and the Steering Committee.

The Steering Committee met again March 28, 1979, in Rosslyn, Va., and reviewed the total program effort on gypsy moth for the 1979 field season. Bob Altman, chairman of the NGMMB, also attended this session.

GYPSY MOTH PUBLICATIONS REPORT

The gypsy moth compendium, "The Gypsy Moth: Research Toward Integrated Pest Management", will be published as U. S. Department of Agriculture Tech. Bulletin No. 1584. Progress has been slow and the last estimate of a completion date was December 1979. Editor/Coordinator Mary Sommerville has been working diligently to speed up the contractors responsible for layout and design of the publication.

The Gypsy Moth Program Accomplishment Report, U. S. Dept. of Agriculture Info. Bulletin No. 421 is being printed and should be out in a few weeks.

Eleven program handbooks have been published and distributed, and the remaining two are in the process of being printed. Complete references for the handbooks are provided in the newsletter under "Recent Publications of Interest". If you have not received copies, contact the individual authors.

RECENT PUBLICATIONS OF INTEREST

Campbell, R. W. 1979. Gypsy moth: Forest influence. US Dept. of Agriculture. Info. Bulletin No. 423.

Campbell, Robert W., Lois D. Levitan, Eugene R. Sobecki, and Mark F. Tardiff. 1978. Population dynamics of the gypsy moth: An annotated bibliography. US Dept. of Agriculture, Forest Service Gen. Tech. Rep. NE-48.

Gansner, D. A, O. W. Herrick, and W. B. White. 1978. Economic analysis of the gypsy moth problem in the northeast. IV. Forest stand hazard ratings for gypsy moth. USDA Forest Service Research Paper NE-410. 3 p.

Gansner, D. A., and O. W. Herrick. 1979. Forest stand losses to gypsy moth in the Poconos. USDA, Forest Service Research Note 273. 5 p.

Herrick, O. W., D. A. Gansner, and P. S. DeBald. 1979. Predicting stand losses from the gypsy moth: An application of Automatic Interaction Detection. Journal of Forestry. 77:2 p. 91-94.

Houston, David R. 1979. Classifying forest susceptibility to gypsy moth defoliation. US Dept. of Agriculture Handbook No. 542.

Houston, D. R. and H. T. Valentine 1977. Comparing and predicting forest stand susceptibility to gypsy moth. Can. J. For. Res. 7:447-461.

Lewis, Franklin B., Michael L. McManus, and Noel F. Schneeberger. 1979. Guidelines for the use of Gypchek to control the gypsy moth. US Dept. of Agric. Forest Service Research Paper No. NE-441.

McManus, Michael L., and Roger T. Zerillo. 1979. The gypsy moth: An illustrated biography. US Dept. of Agric. Home Garden Bulletin No. 225.

Podgwaite, J. D. 1979. Diseases of the gypsy moth: How they help to regulate populations. US Dept. of Agric. Handbook No. 539.

Simons, Edward E., Richard C. Reardon, and Mark Ticehurst. 1979. Selected parasites and hyperparasites of the gypsy moth, with keys to adults and immatures. US Dept. of Agriculture Agric. Handbook No. 540.

Smith, Harvey R., and R. A. Lautenschlager. 1978. Predators of the gypsy moth. US Dept. of Agriculture Handbook No. 534.

Society of American Foresters. 1979. Integrated Pest Management for Forest Insects: Where do we stand today. P. 250-300 In Proc. 1978 Joint Convention Soc. Amer. Foresters and Can. Inst. Foresters, St. Louis, MO.

Talerico, Robert L. 1978. Major hardwood defoliators of the eastern United States. US Dept. of Agriculture Home Garden Bulletin No. 224.

Wargo, Philip M. 1978. Defoliation by the gypsy moth: How it hurts your trees. US. Dept. of Agriculture Home Garden Bulletin No. 223.

Wargo, Philip M. 1978. Judging vigor of deciduous hardwoods. US Dept. of Agric., Agric. Info Bulletin No. 418.

White, William B., Harry B. Hubbard Jr., Noel F. Schneeberger, and Bernard J. Raimo. 1978. Technological developments in aerial spraying. US Dept. of Agric. Agric. Handbook No. 535.

Wilson, Robert W., and Gerald A. Fontaine. 1978. Gypsy moth egg mass sampling with fixed- and variable-radius plots. US Dept. of Agric. Agric. Handbook No. 523.

UPCOMING MEETINGS

The Annual Gypsy Moth Review Meeting for 1979 will be held in Columbus, Ohio, October 23 and 24. For further information contact Larry Ehlers, Department of Natural Resources, Division of Forestry, Fountain Square, Columbus, OH. 43224.

The National Gypsy Moth Management Board will meet in Columbus October 24 and 25 following the Annual Gypsy Moth Review. There also will be a review of all 1979 Gypchek spray projects after the Annual Gypsy Moth Review Meeting.

ACKNOWLEDGEMENTS

We would like to thank all of you who contributed to this, the first issue of "Gypsy Moth News", and to send sincerest apologies to those who were not contacted for contributions this time around. We are planning the next issue of "Gypsy Moth News" for March 1980. For that issue we are planning to present more results from 1979, however, the bulk of the newsletter will involve plans for 1980. For those of you who were not contacted for the fall newsletter, please send your name and address to:

Gypsy Moth News
US Forest Service, FIDM
PO Box 365
Delaware, OH. 43015
ATTN: Noel F. Schneeberger

This will ensure that you will be contacted for contributions to the Spring 1980 newsletter.

Again, many thanks to all!

** IMPORTANT NOTICE **

The Forest Service is required to update mailing lists on an annual basis. If you wish to continue receiving "Gypsy Moth News" you must notify the Forest Service. For your convenience you may fill out the form below and return it to the indicated address. This will ensure that future issues of this newsletter are mailed to you. In addition if you know of someone who would like to receive this newsletter, please indicate his/her name and address in the space provided.

Thanks for your cooperation.

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